REMARKS

This communication responds to the Office Action dated April 16, 2008. No claims are amended, no claims are canceled, and no claims are added. As a result, claims 1-15 are now pending in this Application.

§103 Rejection of the Claims

Claims 1-15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Rhoads et al. (U.S. Patent No. 6,408,082; hereinafter "Rhoads") in view of Chen et al. ("Symmetric phase-only matched filtering of Fourier Mellin transforms for image registration and recognition"; hereinafter "Chen") and further in view of Pereira et al. ("Template based recovery of Fourier based watermarks using log-polar and log-log maps"; hereinafter "Pereira"). However, since a *prima facie* case of obviousness has not been properly established by the Office, the Applicant respectfully traverses the rejection of these claims.

1)   *The Applicable Law*

As discussed in KSR International Co. v. Teleflex Inc. et al. (U.S. 2007), the determination of obviousness under 35 U.S.C. § 103 is a legal conclusion based on factual evidence. *See* Princeton Biochemicals, Inc. v. Beckman Coulter, Inc., 7, 1336-37 (Fed. Cir. 2005). The legal conclusion, that a claim is obvious within § 103(a), depends on at least four underlying factual issues set forth in Graham v. John Deere Co. of Kansas City, 383 U.S. 1, 17 (1966): (1) the scope and content of the prior art; (2) differences between the prior art and the claims at issue; (3) the level of ordinary skill in the pertinent art; and (4) evaluation of any relevant secondary considerations.

Therefore, the test for obviousness under §103 must take into consideration the invention as a whole; that is, one must consider the particular problem solved by the combination of elements that define the invention. *See* Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir.1985). The Examiner must, as one of the inquiries pertinent to any obviousness inquiry under 35 U.S.C. §103, recognize and consider not only the similarities but also the critical differences between the claimed invention and the prior art. *See* In re Bond, 910 F.2d 831, 834, 15 USPQ2d 1566, 1568 (Fed. Cir. 1990), reh'g denied, 1990 U.S.

App. LEXIS 19971 (Fed. Cir.1990). The fact that a reference teaches away from a claimed invention is highly probative that the reference would not have rendered the claimed invention obvious to one of ordinary skill in the art. Stranco Inc. v. Atlantes Chemical Systems, Inc., 15 USPQ2d 1704, 1713 (Tex. 1990). When the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious. Id. p. 4 citing United States v. Adams, 383 U.S. 39, 51-51 (1966). Additionally, critical differences in the prior art must be recognized (when attempting to combine references). In re Bond, 910 F.2d 831, 834, 15 USPQ2d 1566, 1568 (Fed. Cir. 1990), reh'g denied, 1990 U.S. App. LEXIS 19971 (Fed. Cir.1990).

Moreover, the Examiner must avoid hindsight. M.P.E.P. § 2143.01 (citing In re Gordon, 733 F.2d 900, 221 U.S.P.Q. 1125 (Fed. Cir. 1984)). That is, the Examiner cannot use the Applicant's structure as a "template" and simply select elements from the references to reconstruct the claimed invention. See In re Gorman, 933 F.2d 982, 987, 18 U.S.P.Q.2d (BNA) 1885, 1888 (Fed. Cir. 1991). The fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. In re Mills, 16 USPQ2d 1430 (Fed. Cir. 1990); M.P.E.P. § 2143.01.

2)   *Application of § 103 to the Rejected Claims*

First, it is respectfully noted that Rhoads teaches using a Fourier-Mellin transform to detect the presence of a watermark (e.g., a specific set of embedded cryptographic information) in an image, and not for extracting a fingerprint from an audio signal, as claimed by the Applicant.

Second, while the Office asserts, along with Rhoads, that a "… similar process may be used for other empirical data sets such as audio and video …", the degree of similarity, or the effectiveness of such use are never described in this reference. *See* Rhoads, Col. 3, lines 32-33. Indeed, as noted by others in the field, not all applications work well with this technique.

For example, Chen discovered that even when the Fourier-Mellin transform is improved by using FMI-SPOMF (Fourier-Mellin Invariant – Symmetric Phase Only Matched Filtering), the results are poor in certain applications. Thus, when FMI-SPOMG was applied to matching fingerprint images, Chen noted that the results were "inferior to those observed with the other

applications ...". *See* Chen, pg. 1165, Col. 2. Indeed, only 54.97 % PD (percent discrimination) was achieved when identical fingerprint images were compared. *See* Chen, pg. 1161, Col. 1. Since the PD is a relative measure of similarity between images, this means that when identical fingerprint images were compared, the FMI-SPOMF technique rendered barely more than an even chance that the images were "similar". In fact, comparisons of dissimilar images provided up to 41.78 % PD. *See Id.*

Thus, the statement by Rhoads with respect to the potential viability of using a Fourier-Mellin transform to identify watermarks in audio applications is not supported by other evidence in the record. Further, the Applicant was unable to find anything within the bounds of Rhoads that teaches how one should apply the Fourier-Mellin transform to an audio signal – so that reliable results would be obtained, and the problems due to differences in scaling and rotation, encountered with images, might be avoided. *See* Rhoads, Col. 4, lines 1-22 and Chen, pg. 1157, Col. 1.

Third, the Office admits that "Rhoads fails to specifically teach the feature sequence constitutes the fingerprint ..." and proposes to combine Rhoads and Chen to remedy this deficiency. However, this proposition overlooks the specific language of Chen, which teaches away from the combination. Indeed, Chen contradicts the motivation set forth by the Office for combining the references (i.e., "... it would have been obvious ... to transfer the sequence constituting the fingerprint in Rhoads et al transformed image data set in order to have a robust, general, and efficient image matching technique with significantly improved discriminating power ...".

Chen states:

> "... the correct print yields the highest maximum, although the difference with the other, mismatched, prints is less than a factor of two. This result is nevertheless significant, because the usual cross-correlation method, which we applied in comparison, did not yield any correct matching. These results are inferior to those observed with the other applications presented in this paper, **indicating the FMI-SPOMF is not optimal for fingerprint recognition.**" *See* Flannery, Col. 2, lines 22-50 (emphasis added).

Thus, it is clear that Chen explicitly teaches away from using FMI-SPOMF with respect to matching fingerprint images.

As noted in a prior response, the Applicant respectfully submits that the combination of limitations in independent claims 1 and 8 yield an unpredictable result, namely, compensating for speed changes in an audio signal to provide a speed invariant fingerprint. Since the result of the claimed features is not predictable, and because Chen teaches away from the use of FMI-SPOMF with respect to fingerprint recognition, one of ordinary skill in the art would have no reasonable expectation of success when considering the combination of Rhoads and Chen. Therefore, it is improper to combine Rhoads with Chen to remedy the deficiency of Rhoads, namely, a failure to describe or suggest transforming audio signal features to extract an audio fingerprint. The addition of Pereira does nothing to remedy this deficiency.

Finally, none of the references address the claimed feature of "subjecting the extracted set of features to a Fourier-Mellin transform **to compensate for speed changes in the audio signal.**" (claims 1 and 8, emphasis added). This element is not taught or suggested by Rhoads, Chen, or Pereira. Thus, no combination of the references can provide this feature.

Therefore, independent claims 1 and 8, reciting the transformation of extracted perceptual features from an audio signal to provide a fingerprint that compensates for speed changes in the audio signal, are nonobvious. In addition, any claim depending from a nonobvious independent claim is also nonobvious. *See* M.P.E.P. § 2143.03. Therefore, claims 2-7 and 9-15 should also be in condition for allowance, and the Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 1-15 under 35 U.S.C. § 103(a).

AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111
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CONCLUSION

The Applicants respectfully submit that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone the Applicants' attorney at (210) 308-5677 to facilitate prosecution of this Application. If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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